

# Visualization of proteins in SDS-PAGE gels, Coomassie blue staining

## Introduction

Visualization of protein bands is carried out by incubating the gel with a staining solution. The two most commonly used methods are Coomassie and silver staining. Coomassie staining, though less sensitive, is quantitative and Coomassie-stained proteins can be used for downstream applications.

## Materials

- › Coomassie staining solution (see table [Coomassie staining solution \(https://www.qiagen.com/fi/resources/molecular-biology-methods/protein/#Coomassie%20staining%20solution\)](https://www.qiagen.com/fi/resources/molecular-biology-methods/protein/#Coomassie%20staining%20solution))
- › Destaining solution (see table [Destaining solution \(https://www.qiagen.com/fi/resources/molecular-biology-methods/protein/#Destaining%20solution\)](https://www.qiagen.com/fi/resources/molecular-biology-methods/protein/#Destaining%20solution))
- › SDS polyacrylamide gel containing separated proteins

## Procedure

1. Make Coomassie staining solution:

Table1			
	A	B	C
1	<b>Composition of working solution</b>	<b>Component</b>	Amount per 100 ml
2	0.05% (w/v) Coomassie Brilliant Blue R-250	Coomassie Brilliant Blue R-250	50 mg
3	40% (v/v) ethanol	Ethanol Dissolve then add:	40 ml
4	10% (v/v) glacial acetic acid	Glacial acetic acid	10 ml
5	50% (v/v) water	Water	50 ml

2. Make Destaining solution:

Table2			
	A	B	C
1	Composition of working solution	Component	Amount per 100 ml
2	40% (v/v) ethanol	Ethanol	40 ml
3	10% (v/v) glacial acetic acid	Glacial acetic acid	10 ml
4	50% (v/v) water	Water	50 ml

- Incubate the gel in Coomassie staining solution for between 30 min and 2 h with gentle shaking.

**Tip:** Coomassie Brilliant Blue R reacts nonspecifically with proteins.

- Gently agitate the stained gel in destaining solution until the background becomes clear (1–2 h).

**Tip:** A folded paper towel placed in the destaining bath will soak up excess stain and allow the reuse of destaining solution.

- After destaining the proteins appear as blue bands against a clear gel background. Typically, bands containing 50 ng protein can be visualized.